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FACT SHEET

L-957

THINNING PINE PLANTATIONS

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Thinning poorer trees in pine plantations by the selection method is the best way to increase future timber growth and value. Increased pulpwood logging costs and labor shortages necessitate thinning plantations by rows. Cut every fourth row and selectively thin the other three to remove one out of eight remaining trees, especially those that are diseased, rough or suppressed. It is best in plantations that are not overstocked or not the most uniform and disease-free. Many foresters favor thinning every third row in uniform stands. Plantations with more than 800 trees per acre may have to be thinned by cutting every other row.

What Is Thinning?

Thinning of pine plantations is a form of intermediate cutting to improve the yield of the timber stand as a whole. Thinning is necessary because competition between trees in a stand for such things as soil moisture, light and nutrients becomes so intense that growth rates slow down, sometimes drastically. The better trees are left so that the growth is concentrated on higher-valued tree stems. Remove trees attacked by forest pests when thinning. Planted pine stands or normally stocked plantations of about 600 trees per acre usually reach the thinning stage at 12 to 15 years of age. Plantations of higher stocking or greater number of trees on a per acre basis on better sites may require thinning sooner.

The principal objectives of thinning are (1) to regulate the distribution of growing space for the residual trees and (2) to utilize to the best financial advantage all the merchantable timber produced by the stand. In the latter case, it may mean to sell the timber for small sawlogs rather than pulpwood, or poles rather than sawlogs if the size, quality and volume are available.

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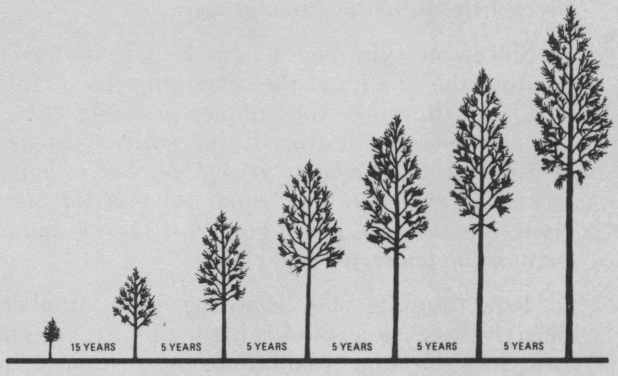
Pine Trees Double in Value

Due to increased machine logging, larger and larger timber harvests are advocated. This has caused some opponents of timber thinning to say it is no longer practical. Clear cutting young timber stands occur at the time when the owner's annual returns are at their highest. Plantations composed of trees 8, 10, 12 and up to 14 inches in diameter at breast height (diameter 4½ feet above the ground) may be increasing in volume and value at the rate of 20 percent per year or more. (See Table 1). From 8 to 16-inch diameter trees, the Scribner scale volume nearly doubles during each 5-year period required, on the average, to grow to the next largest 2-inch diameter class. The value

TABLE 1. PINE TREES INCREASE IN VOLUME AND VALUE WITH INCREASED DIAMETER



Diameter (4½ ft.)	8"	10"	12"	14"	16"	18"
Volume per tree (bd. ft.) (Scribner Scale)	14	28	61	114	211	306
Tree value-stumpage at:						
$30 per M	$ .42	$ .84	$1.83	$3.42	$ 6.33	$ 9.18
$40 per M	.56	1.12	2.44	4.56	8.44	12.24
$50 per M	.70	1.40	3.05	5.70	10.55	15.30

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also nearly doubles. For example, a 10-inch tree contains about 28 board feet on the Scribner scale. At $30 per thousand board feet (M), it is valued at 84 cents. In 5 years the tree grows to a 12-inch diameter with 61 board feet by Scribner scale and is worth $1.83, or over twice its 10-inch value. Similar increases occur by using the Doyle scale.

The price difference offered for clear-cut or heavily-thinned timber versus modestly-thinned timber will not offset the loss to the grower for not carrying an adequate part of the stand to larger and higher-value products. Possible price increases for timber resulting from changing utilization practices, such as occurred in manufacturing plywood from Southern pine, may mean even greater future returns for landowners.

Thinning pine plantations by what might be termed *selection* of individual trees to be cut remains the best means for stimulating future timber growth and maximizing returns. In this case trees for harvest are those that are rough, diseased, crowded, suppressed or have damaged stems.

Row Thinning

In recent years the cost of logging pulpwood and labor shortages has forced many pulpwood producers to undertake plantation thinning by rows. The necessity for additional mechanization results in a rise in the use of row-thinning methods. Considerable differences of opinion occur, however, over how many rows to remove. *It's important from the timber grower's viewpoint that enough trees are left following thinning to maintain (or nearly so) maximum per acre timber growth, not necessarily individual tree growth.*

Since row thinning is nonselective, it does not improve the quality of the remaining trees. In the first row thinning, the submerchantable trees in the cut rows are destroyed and wasted. *In heavy row thinnings, diameter growth on the remaining trees may exceed that of modestly thinned plantations, but the total stand growth is sharply reduced because of fewer trees per acre.*

Row thinning may be wrong if the number of defective trees in a stand is high. This is especially true in slash pine plantations where many trees have fusiform rust cankers. For example, Enghardt[1] recently described a selective thinning in a 13-year-old slash pine plantation in Louisiana cut to 85 square feet of basal area per acre, considered adequate for that timber-growing site. (Basal area is a term describing the trees' cross-sectional area at breast height expressed in square feet.) After thinning an average of 452 trees per acre were left in the plantation of which 33 had fusiform cankers. In the selectively marked stand, none of the remaining diseased trees were considered poor risks. Row thinning every third row would have left the same basal area as the selective method, but three times as many cankered trees. Some would have died before the next thinning, whereas they were utilized in the selective thinning.

Also consider weather hazards. Brender and Romancier[2] have pointed out that in loblolly pine plantations in Georgia ice damage was highest with row thinning. Only light damage occurred where cutting was done selectively.

Finally, the cutting intensity is as important in row thinning as the selective method. *The best diameter growth will be achieved when every other row is cut (or two out of every four or more rows cut), but the remaining growing stock can be reduced too much for optimum per acre volume growth.* Again, individual tree growth is not the most important consideration, but rather total growth per acre.

Recommended Row Thinning Methods

By contrast, cutting every fourth row or less (every fifth, sixth, etc. rows) generally will not stimulate acceptable diameter growth. Combining the cutting of every fourth row or less with selection may prove best in plantations that are not overstocked or not the most uniform and disease-free. For example, in cutting every fourth row, about one tree out of every eight remaining should be removed also by selective thinning because of disease or poor form to reach a desirable number of trees per acre for proper stocking.

Many foresters favor thinning every third row in the first plantation cutting. Stocking may not drop sharply and future growth may approximate that from moderate selective thinnings.

Some pine plantations are overstocked because they were planted at spacings closer than 6 by 8 feet and survival is higher than desired. If the plantation contains 800 trees per acre or more, removal of every other row may be necessary.

Literature Cited

[1]***Enghardt, H. G., 1969. In Young Pine Plantings: Row or Selection Thinning, Forests & People, Louisiana Forestry Association, 2nd Quarter, 1969, Vol. 19, No. 2, pp. 34-45.***

[2]***Brender, E. V. and Romancier, R. M., 1960. Glaze Damage in Loblolly Pine Plantations. Southern Lumberman 201 (2513):168.***

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